

CLAIMS

1. (Amended) A method of producing an oxide superconducting film on a single-crystal substrate by depositing, on the single-crystal substrate, substances scattered from a raw material due to irradiation with laser beams according to a pulsed-laser deposition method, wherein the irradiation of the raw material is performed in a manner such that the repetition frequency of the pulse irradiation of the laser beams is divided into at least two steps, the laser frequency of a second step being higher than the laser frequency of a first step and less than 100 times the laser frequency of the first step.

2. (Amended) A method of producing an oxide superconducting film according to claim 1, wherein the laser frequency of the second step is not less than 2 times and not more than 40 times as high as the laser frequency of the first step in a case where the laser frequency of the first step is greater than or equal to 1 Hz and less than 20 Hz; and the laser frequency of the second step is not less than 2 times and not more than 5 times as high as the laser frequency of the first step in the case where the first laser frequency is 20 Hz.

3. A method of producing an oxide superconducting film according to claim 1 or 2, wherein the laser power is 400 mJ or more.

4. A method of producing an oxide superconducting film according to any one of claims 1 to 3, wherein the temperature of the single-crystal substrate

during the pulsed-laser deposition is more than or equal to 600°C and less than 1,200°C.

5. A method of producing an oxide superconducting film according to any one of claims 1 to 4, wherein the gas pressure during the pulsed-laser deposition is within the range of 1.33 Pa to 100 Pa.

6. A method of producing an oxide superconducting film according to any one of claims 1 to 4, wherein the gas pressure during the pulsed-laser deposition is within the range of 1.33 Pa to 66.66 P

7. A method of producing an oxide superconducting film according to any one of claims 1 to 6, wherein the atmosphere during the pulsed-laser deposition contains oxygen.

8. A method of producing an oxide superconducting film according to any one of claims 1 to 7, wherein the oxide superconducting film comprises an RE123 composition, where RE is composed of at least one of a rare-earth element and yttrium.